Ambient Air Monitoring at Ground Zero and Lower Manhattan Following the Collapse of the World Trade Center

Authors: Alan Vette, Roy Zweidinger

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The U.S. EPA National Exposure Research Laboratory (NERL) collaborated with EPA's Regional offices to establish a monitoring network to characterize ambient air concentrations of particulate matter (PM) and air toxics in lower Manhattan following the collapse of the World Trade Center (WTC). These data have been used by the National Center for Exposure Assessment (NCEA) to assess the public's exposure and their risk associated with such exposures. Working closely with personnel from Region 2 in Edison, NJ and New York, NY, we identified several possible monitoring locations and installed air monitoring equipment around the WTC complex (Ground Zero) and the surrounding area. Monitoring began on September 21, 2001 at three sites within 100-200 m of Ground Zero with additional monitoring sites located about 500-1000 m from Ground Zero and continued until May 15, 2002. Integrated (24-hour and 72-hour) PM samples and continuous measurements of PM concentrations were taken at these sites along with measurements of volatile organic compounds and other air toxics. In early October 2001, Region 2 and NERL developed an updated monitoring strategy that included locating additional air monitoring sites and meteorological measurements in the surrounding area to better understand the migration of pollutants from the WTC through lower Manhattan. The meteorological measurements were used to model the wind patterns in Manhattan, incorporating the landscape features produced by buildings. Samples were analyzed collaboratively by the NERL, Region 7 and Region 2. Results from the combined monitoring strategy indicate that concentrations of PM and air toxics pollutants were elevated and highly variable through late October, 2001, particularly at the sites close to Ground Zero. Beginning in November, 2001, concentrations of PM and air toxics decreased substantially and stabilized thereafter. Integrating the results from the PM and air toxics monitoring with the meteorological modeling proved to be critical in the risk assessment and evaluation performed by the NCEA.

Contact Information: Alan Vette
ORD/NERL/HEASD/EMAB
919-541-1378
vette.alan@epa.gov

Roy Zweidinger
ORD/NERL/HEASD/EMAB
919-541-2324
zweidinger.roy@epa.gov